Connecting Library Instruction to Web Usability: The Key Role of Library Instruction to Change Students' Web Behavior

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Abstract

Library instruction plays a key role in web usability. During instructional sessions, librarians shape the ways students behave on the library website (user's web behavior). They teach students how to use the library website and demonstrate various pathways by which students can access library resources and services. Although library instruction and user's web behavior are closely intertwined, very little research has combined these two realms. Many usability studies have focused only on the library website itself without considering the various contexts in which students use it. Few usability studies have had any connection with library instruction. This study investigated the intersection between user's web behavior and library instruction. During instructional sessions, freshman students were asked to perform a series of information seeking tasks on the library website both prior to, and immediately after, instruction. A usability tool – Verify – recorded individual student use of the website during the completion of each of these tasks. The results allowed us to investigate how students behaved on the library website to complete the tasks and how the steps demonstrated by the librarian during instruction strongly influenced how students completed the tasks afterward. This paper suggests how these techniques could be used to improve library websites.

Keywords: *User-friendless, Web usability, User's web behavior, Library instruction, Information literacy*

1. Introduction

The value of library services is closely tied to user friendliness. Even the most "important" library resources and services are of little value to users if users are unable to locate, interact with, and use them. Because a large proportion of today's library users connect with library services via the online environment with the library website as the key point of entry, the user friendliness (usability) of the library website is critical. Web usability provides a key foundation on which the successful connection of library users and library services depends.

Vu and Proctor (2011) state that "Usability is the most fundamental attribute that determines the ease of use with which users interact with a product". Web usability can be simply defined as "websites that are easy to use" (Lazar, 2006). When considering the usability of a website, focusing on the end user is of utmost importance. Norlin and Winters (2002) emphasize that this is the number one rule to follow when creating a website and one that is sometimes overlooked. For libraries, Davidsen and Yankee (2004) stress that when designing a website, a strong emphasis should be on developing a clear profile of the patrons of the library. This includes identifying not only who the users of the website are but also considering specific characteristics of the various user groups. Secondly, Davidsen and Yankee (2004) mention it is of key importance to identify what the users want to

accomplish as they interact with the website.

Despite the tremendous importance of web usability to today's libraries, a large scale study of over 1,400 academic and public library websites in the United States, found that only 30 percent of institutions had tested their website for usability (Chow, Bridges, & Commander, 2014). Libraries that choose to evaluate their websites have a wide variety of means at their disposal. Vu and Proctor (2011) outline several. These include formal usability tests (where users are asked to perform a series of set tasks on a website) as well as many other evaluation methods including focus groups, field methods, observations, questionnaires, prototyping, inspection methods, and card sorting. Because each type of evaluation has unique strengths and weaknesses, Vu and Proctor (2011) advocate a multi-method approach to gain a more complete understanding of the usability of a site.

The library research literature contains a wealth of articles reporting research in the area of usability of academic library websites (*for examples see* Battleson, Booth, & Weintrop, 2001; Becker & Yannotta, 2013; Emde, Morris, & Claassen-Wilson, 2009; Augustine & Greene, 2002; Iqbal & Warraich, 2012; McGillis & Toms, 2001; Persson, Långh, & Nilsson, 2010; Cobus, Valeda, & Ondrusek, 2005). These studies focus on student users and/or faculty users and how these groups interact with the website in usability tests, and improving the website accordingly.

It is surprising how few usability studies have mentioned the role of library instruction given how closely library instruction and user's web behavior are intertwined. Only one study (Castonguay, 2005) was located in the literature that linked these two realms. This is surprising because the library website is commonly an important component of library instructional sessions. Additionally, during instruction, librarians often directly train students to use specific pathways on the library website as students learn to locate various library resources and services. Librarians are therefore playing a key role in shaping how students behave on the library website (user's web behavior).

But are librarians modeling behavior that the students would naturally prefer? For example, students are often using Google in their everyday lives. Their information seeking behavior from day to day is likely largely search-based. Since many academic library web sites are designed from a browse-based structure, is there a disconnect between how students want to use a library website and how librarians want them to use it?

We investigated the connection between user's web behavior and library instruction. We asked whether or not student user behavior on the library website was influenced by the way in which the librarian taught. Specifically, we addressed whether or not a librarian teaching browse-focused instruction vs. search-focused instruction influenced post instruction student behavior on the library website.

2. Methods

This study was conducted in the Fall 2014 semester with freshmen students enrolled in two separate sections of an introduction to science course at IUPUI. The two sections (hereafter referred to as Group 1 and Group 2) contained 27 students and 21 students respectively. Each of the two class sections had the same lead instructor as well as the same librarian teaching the library instruction session. For both sections, the library instructional session was a single class period of 1 hour and 15 minutes and was the students' first formal library instruction they had received at this university. The instructional content of both sessions focused on the overarching goals of introducing students to the library website, basic information and services about the library, and guidance on resources for a career research project.

The students in both class sections were asked to perform a series of 20 information seeking tasks on the library website both prior to (pretest), and immediately after (posttest), the core instructional content provided by the librarian. A web-based usability tool, Verify

(ZURB, n.d.), recorded individual student use of the website during the completion of each of these tasks during the pre and posttests. Specifically, the Verify Click Test was used which recorded where each student clicked on a static screen shot (Figure 1) of the library web site for each of the 20 tasks.

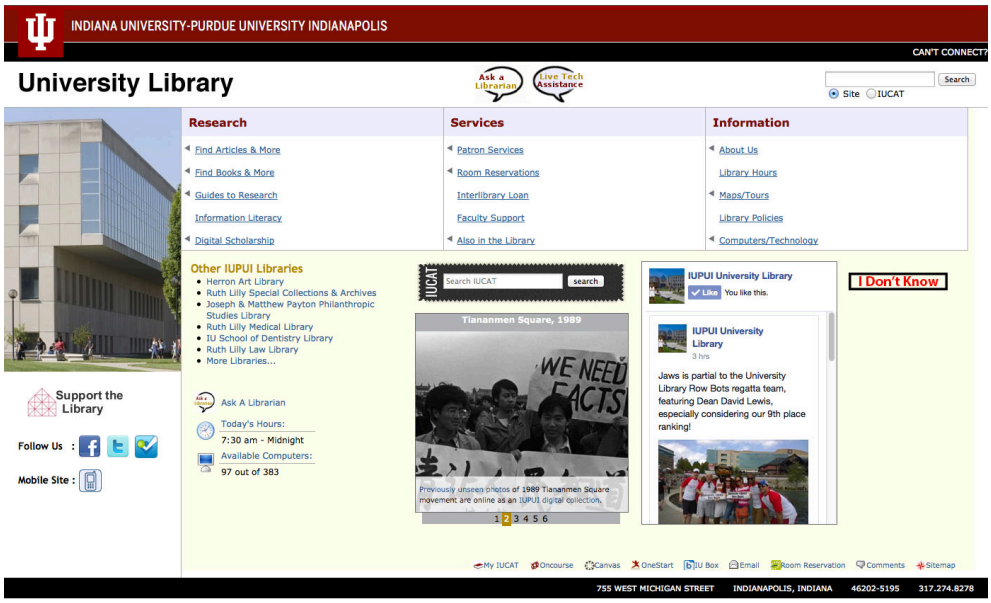

Figure 1. Library website screenshot used in the Verify Click Test tasks

The screen shot was an exact replica of the library web site with the addition of an "I don't know" button on the middle right of the screen. Students were instructed to click this if they were not sure where to go in response to a question. The in-class methodology of the pre and posttest usability trials was used specifically because of the focus on investigating the interaction of library instruction with web user behavior.

During the instructional component of the sessions, located between the pre and post usability test, the librarian used two separate instructional methodologies for each of the two class sections (*Table 1.*).

Table 1. Class outline for the 1 hr 15 min library instructional session

Group 1 (27 students)	**Group 2** (21 students)
Pretest using Verify usability tool	Pretest using Verify usability tool
Browse-focused instruction by librarian	**Search-focused instruction by librarian**
Posttest using Verify usability tool	Posttest using Verify usability tool

For Group 1 the librarian demonstrated browsing pathways (Browse-focused instruction) for each of four specific tasks on the library website. For Group 2 the librarian demonstrated using the search functions on the library website (Search-focused instruction) for the same tasks. The four specific demos focused on where to locate the following information on the website: Group study room information, Rich Media (specialized high performance computers in the library), Academic Search Premier (EBSCO database), and Finding Books.

For the Browse-focused instruction, the librarian demonstrated the use of the menu items from the center three columns of the library website. The following browse pathways were demonstrated for the four tasks:

1) Group Study (Room Reservations -> Group Study)

2) Rich Media (Computers/Technology -> Rich Media)

3) Academic Search Premier (Find Articles & More -> Databases A-Z -> Academic Search Premier

4) Finding Books (Find Books & More -> IUCAT [Indiana University's online library catalog])

For the Search-focused instruction, the librarian demonstrated the use of the website's upper right search box for locating information about Group Study, Rich Media, and Academic Search Premier, and used the website's centrally located search box for Finding Books.

3. Results

From the Verify Click Test results we categorized student responses into four groups based on the following criteria 1.) "Search" (search box in upper right or middle of the website), "Browse" (any menu item link in the three columns that form the core of the website), "I Don't Know" (an I don't know area to the middle right of the website that was added specifically to the screenshot of the website for this study), or "Anywhere" (none of the areas included in the three categories above.

There are significant differences in terms of the ways students looked for information or resources between Group 1 (browse-focused instruction) and Group 2 (search-focused instruction) after library instruction as well as before and after within Groups. However, at the same time, there is no difference for certain information seeking tasks between Group 1 and Group 2 after library instruction. There is no behavior change before and after within Groups either.

Moreover, it is clear that students were influenced by library instruction when they looked for particular information or resources although these were not covered or demonstrated. The ways they used the library website changed before and after within Groups.

3.1 Library Instruction: Rich Media Cluster, Academic Search Premier Database, IUCAT and Group Study Room

Before library instruction, the majority of students in both Groups navigated menu links to find and access the webpage of Rich Media Cluster or simply clicked on 'I don't know' area. However, after instruction, the Group 1 students browsed more than before while there is a significant indication that the Group 2 students tended to search more (Figure 2).

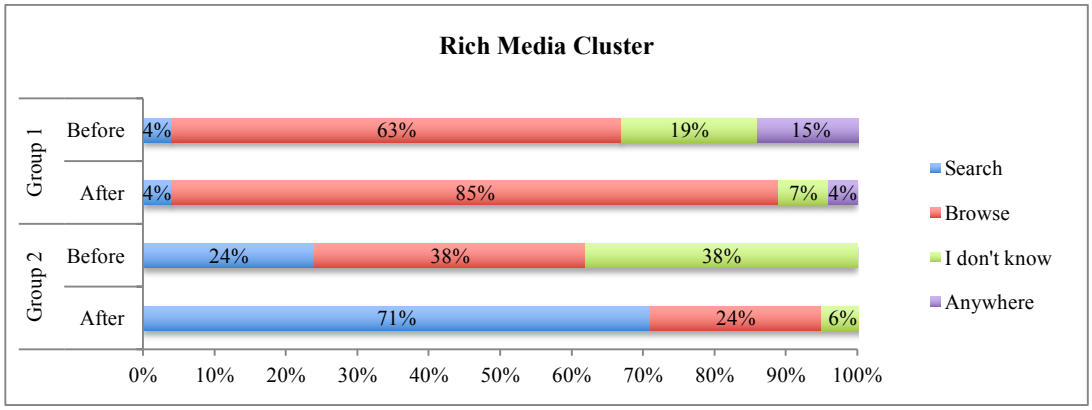

Figure 2. Before and after comparison of rich media cluster

When students were asked to click on where they would go for accessing the Academic Search Premier database, there was no difference between Group 1 and Group 2 before library instruction. 37% of the Group 1 students made their first click on the search boxes while 59% of students browsed the menu links. In Group 2, 33% of students tried to search and 52% of students browsed. However, after instruction, 78% of students in Group 1 navigated, but 88% of students in Group 2 searched (Figure 3).

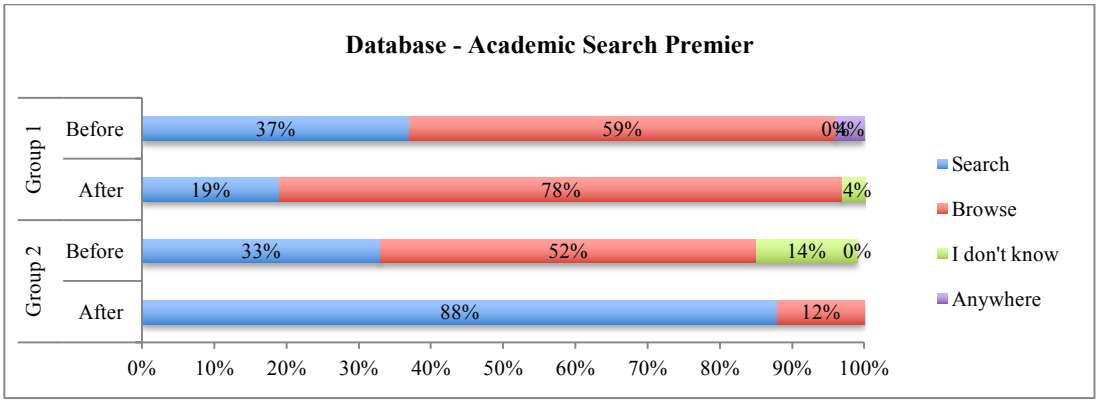

Figure 3 Before and after comparison of Academic Search Premier database

In general, students in both Groups were likely to browse menu links more than to use search boxes before instruction in order to find books without titles in mind and specific books whose titles were given in the tasks. In addition, there is no significant difference after instruction between two Groups when they were asked to find books and e-books although there was a little increase in using search boxes in Group 2. However, when students were asked to find specific book and e-book titles, half of the students in Group 2 followed what the librarian demonstrated by using search boxes instead of browsing menus (Figure 4/ Figure 5/ Figure 6/ Figure 7).

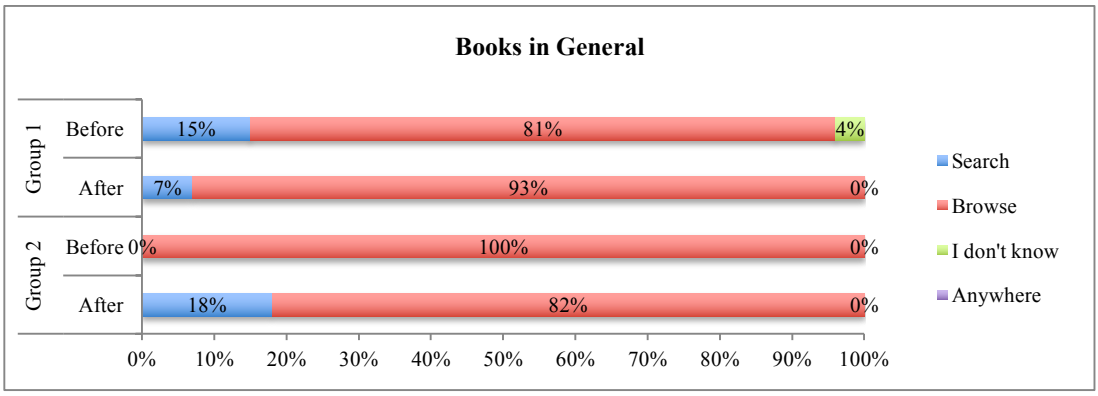

Figure 4. Before and after comparison of books in general

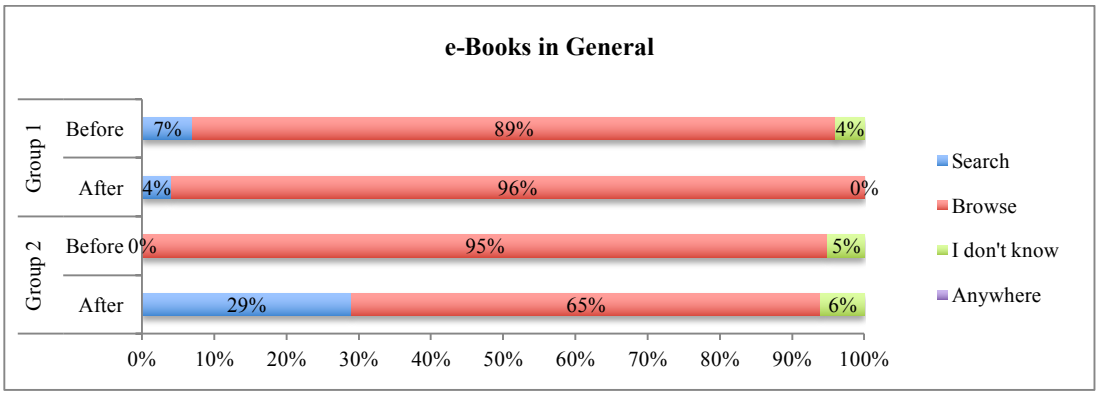

Figure 5. Before and after comparison of e-books in general

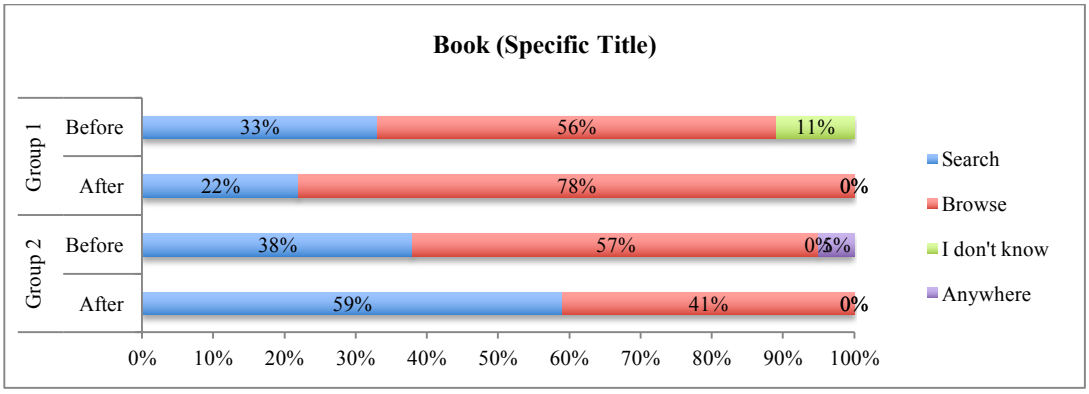

Figure 6. Before and after comparison of specific title of book

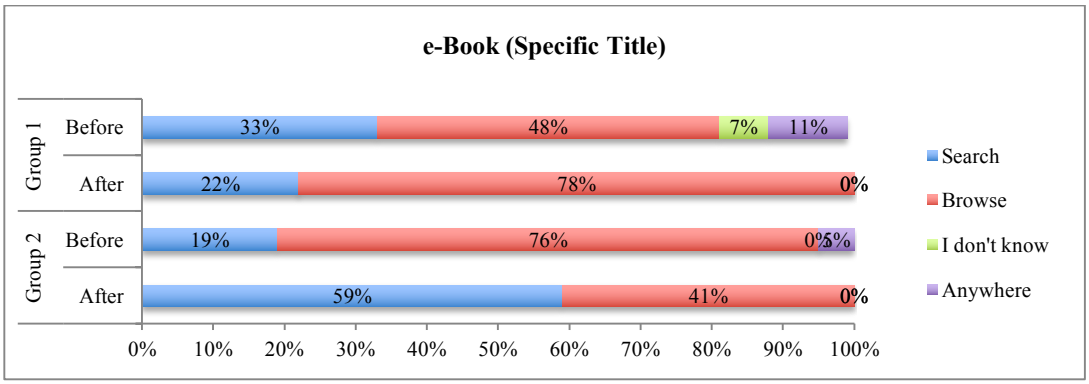

Figure 7. Before and after comparison of specific title of e-book

Like the task of finding books and e-books, students in both Groups clearly indicated that they preferred to browse when they were asked to find information on Group Study Room. Although the librarian used the search box during the Group 2 demonstration, the majority of students still navigated the menu link which was Room Reservations on the library website (Figure 8).

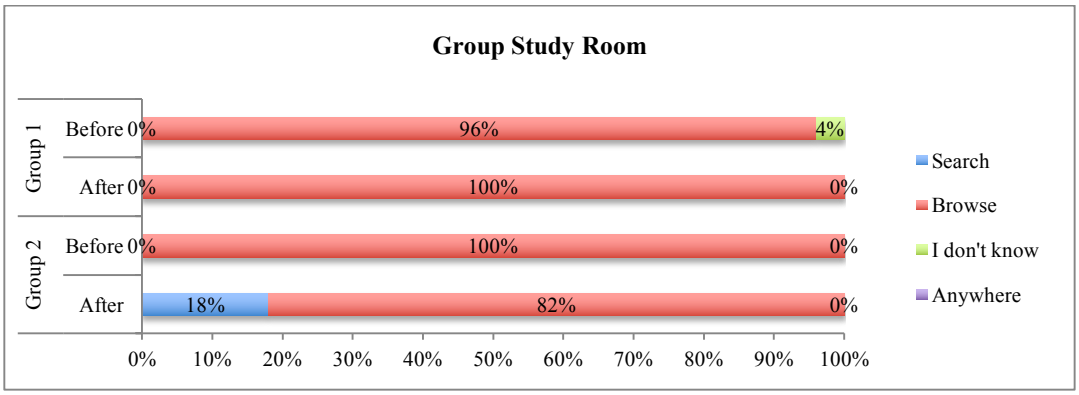

Figure 8. Before and after comparison of group study room

3.2. Without library instruction: Databases and APA guide

During library instruction, the librarian didn't teach students where to go for accessing databases to which the library subscribes except Academic Search Premier. Students were asked to click on where they would go for accessing databases in general, and it is obvious that students in both Groups were more likely to browse menu links before instruction. After

instruction, 85% of students in Group 1 chose a browsing option while 71% of students in Group 2 pointed that they were using search boxes (Figure 9).

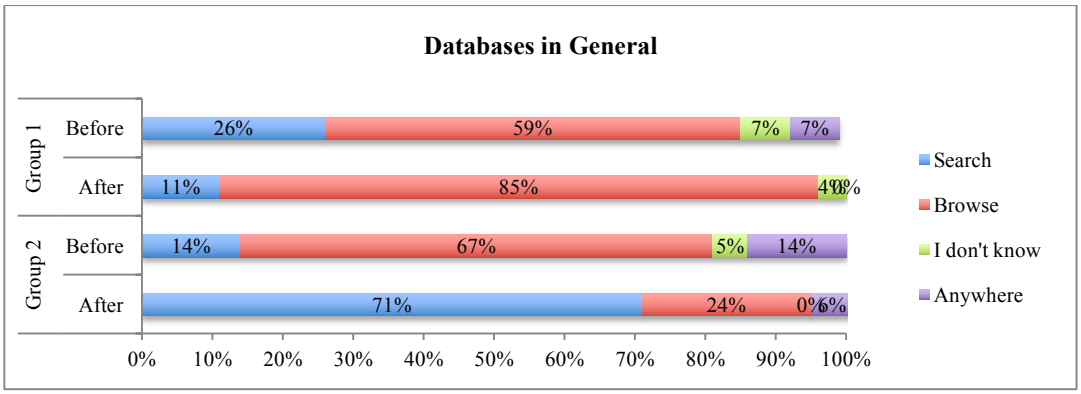

Figure 9. Before and after comparison of databases in general

Although the librarian didn't cover where to find information about how to cite in APA style, 82% of the Group 2 students indicated that they were using search boxes after library instruction while only 14% of students initially used the search option. In Group 1, the use of browsing menus increased before and after instruction while the use of searching option decreased (Figure 10).

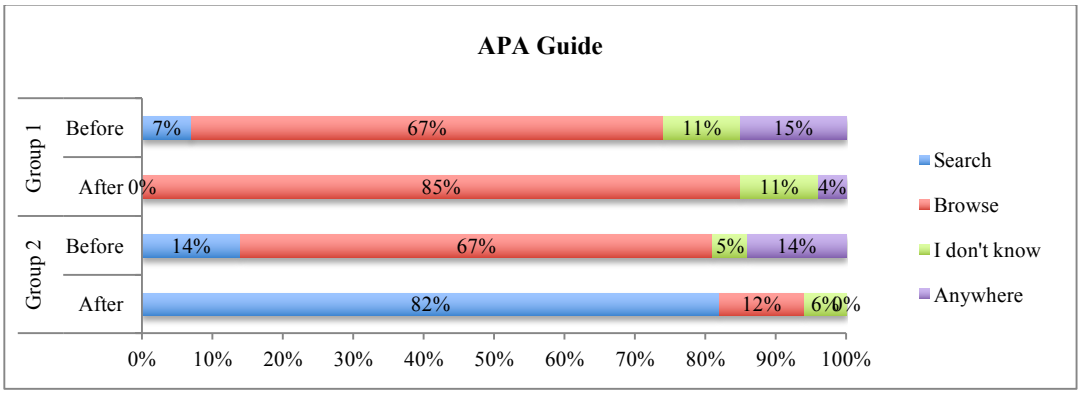

Figure 10. Before and after comparison of APA guide

4. Discussion

4.1 Search vs. browse on the library website

The majority of the freshman students, before library instruction, start browsing on the library website while very few use the search box. These days, students are familiar with starting off with search engines like Google to find information. That's why most popular commercial websites with high traffic like Google, YouTube, and Facebook have moved towards search-based navigation, yet minimized browse capabilities. However once they land on the website, they are more likely to navigate through menus than using a search option within the website.

There are several reasons why freshman students use a browsing option more than a searching option. In general, the search mode is in place when students exactly know what they are looking for. On the other hand, the browse mode is executed when they are not sure about what they want to find or when they want to explore new discoveries. As freshman students, they are not familiar with the library website; they do not know what kind of information or resources that they can find on the website; and mostly they do not know yet what to search. In addition, search from the library website brings different sets of results

from Google search with which freshman students are familiar and they are unaccustomed to library's own search mechanism.

4.2 User's behavior and library instruction

The information seeking behavior of the freshman students has changed after library instruction. The Group 1 students are inclined to browse more while the Group 2 students dramatically increase their use of the search boxes. However, when the Group 2 students look for Group Study Room, their information seeking behavior does not change. They still browse despite search-focused library instruction.

In general, students are more likely to click on the link than typing a keyword into the search box because it is easier and faster. Therefore, if there are links on the website whose label or title matches with the words in students' mind, they immediately click on the links rather than typing a word into the search box in order to find information. There is a link for the Group Study Room on the library website so students do not need to put extra effort in typing a set of keywords to locate information about it.

In terms of databases to which library subscribes as well as the APA style guide, there are no links on the main website whose labels or titles exactly match with them. These can be found:

- Find Articles & More -> Databases A-Z
- Guides to Research -> Reference -> Citation Styles

The Group 1 students are exposed to other sections related to the Academic Search Premier database and etc. when the librarian demonstrates the pathways to access them. Although there are no exact links, they try to navigate first. However, the Group 2 students have library instruction focusing on search and this instruction influences the ways they look for information when they know exactly what they want to find like databases and the APA style guide.

However, their information seeking behavior does not change after instruction when students do not exactly know what they expect to locate. For example, when students in both Groups are asked where they would go for finding books and e-books in general, both Groups still navigate after instruction although there is a relatively small number of increase in search in Group 2. On the other hand, when students in both Groups are asked to find a specific title for book and e-book, the Group 1 students increase their use of navigation and decrease to use a search option while the Group 2 students do the other way around.

4.3 Significance of research

Web usability and library instruction are important in order to provide a holistic user experience at the library. However, very little research has tried to associate these two areas with each other. This study highlights the importance of the role of library instruction in user's information seeking behavior. The students are affected by library instruction regarding the ways they seek information. Library instruction plays a significant role in improving web usability as well as identifying the context when students dominantly use browse or search. Moreover, this study emphasizes that how and what to cover during library instruction is important to increase students' ability to use the library website. Finally, this study discovers possibilities that a usability tool can be used to assess library instruction.

4.4 Limitations and future research directions

As there are very few studies conducted to find a relationship between users' web behavior and instruction in the library field, there is no established methodology. Even though the usability tool that was used in this study – Verify – is popular among usability experts, no one in the library context use it. This study is analyzed based on quantitative data and it would be good to have interviews with students after instruction to deeply

understand users' web behavior. Furthermore, the task questions starting with 'Click on…' may incline students to browse menu links rather than use a search box. Therefore, the future research should consider not only quantitative data but also qualitative data and design neutral task questions.

5. Conclusion

Students use both navigation and search interchangeably on the library website depending on the context. In order to achieve the best user experience, the library website should support both approaches and provide organized pathways to access based on students' preference. In addition, librarians who teach students should be aware of the impact their instruction has in shaping students' web behavior when it comes to finding information or resources on the library website.

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